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AUTHOR Weissman, Julie; And Others
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ABSTRACT

The effectiveness of developmental education policies at a comprehensive community college was investigated using a new student tracking system. A sample of 1,644 students were tracked from fall 1992 until the end of the fall 1994 semester, 1,226 of whom evidenced basic skills and were eligible for college-level courses, and 418 of whom were classified as skill-deficient. After the fall 1994 semester, 179 skill-deficient students had not remediated and 239 students had remediated. The college-level and skill-deficient students were compared on persistence and performance. Also examined were links between skill-deficient students' academic performance and their enrollment patterns in developmental education courses exclusively, college-level courses and remedial courses, and college-level courses only. Additional concerns were rates of remediation and types of problems (math only, language only, or both, and reading and/or writing deficiency, or both). Results support the following recommendations: skill-deficient students should be required to remediate upon initial enrollment; these students should be allowed to take college-level courses along with remedial studies, but language deficient and triple-deficient students should be encouraged to finish remediation before beginning college-level courses. In conclusion, the results point to guidelines for designing or revising policies governing developmental education programs. (Contains 11 references.) (SW)

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Assessing Developmental Education Through Student Tracking

Julie Weissman, Ph.D.
Director
Institutional Research and Planning
College of Lake County
19351 W. Washington Street
Grayslake, IL 60030
708-223-6601, extension 2419

Elizabeth Silk
Research Associate
Institutional Research and Planning
College of Lake County
19351 W. Washington Street
Grayslake, IL 60030
708-223-6601, extension 2421

Carole Bulakowski, Ph.D.
Director
Learning Assistance Center
College of Lake County
19351 W. Washington Street
Grayslake, IL 60030
708-223-6601, extension 2446

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Jean Endo
Editor
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Assessing Developmental Education Through Student Tracking

Abstract

This paper reviews the results of a research study designed to assess the effectiveness of the policies governing the developmental education program at a comprehensive community college. The major issues addressed in the study are the following: required remediation of skill-deficient students, enrollment in college-level courses by skill-deficient students, and differing policies for skill-deficient students depending on the extent of deficiency. The results point to guidelines for designing or revising policies governing developmental education programs. A recently implemented student tracking system was used to conduct this comprehensive and in-depth analysis of student enrollment patterns, persistence, and performance.

Assessing Developmental Education Through Student Tracking

Developmental education programs are designed so that students can gain the skills necessary to complete college-level courses successfully. These programs may include some or all of the following components: identification of skill-deficient students, advisement, placement, courses, and academic support for the remediation and retention of skill-deficient students. Although programs designed to assist underprepared college students have been offered at the postsecondary level since 1849 (Brier, 1985), controversy continues over the policies governing these programs, their effectiveness, and even over their right to exist in colleges and universities.

Research to evaluate developmental education programs tends to focus on their overall effectiveness. The literature includes many studies that have been conducted to justify the existence of developmental education programs and to demonstrate their effectiveness. In 1983, Kulik, Kulik, and Shwalb published a meta-analysis of findings from 60 studies on college programs for high-risk and disadvantaged students. They concluded that participating in these programs was related to improved persistence and grade point average (GPA). Walleri (1987) tracked the academic performance and persistence rates of remedial students for two years. His analysis demonstrated that the developmental education program improved the persistence of skill-deficient students. A study by Seybert and Soltz (1992) of the effectiveness of a community college's developmental reading, English, and mathematics courses indicated that the GPAs of remedial students dropped significantly in the semester after completion of their developmental education courses but then gradually increased. Although these students earned passing grades in their college-level courses, their GPAs and completion rates were lower than those of the general college student body. Another community college study (Haeuser, 1993) also compared skill-deficient students with the general population. This research showed that over half of the remedial students completed their developmental education courses and had a higher persistence rate than the general student population from fall to spring semester. In addition, most full-time remedial students in the study completed subsequent college-level courses. Haeuser concluded that students who completed their basic skills requirements had a better chance of succeeding academically. In a

review of the impact of developmental education programs at 150 colleges and universities, Boylan and Bonham confirmed that "... on the whole, developmental education programs do seem to work" (1992).

The conclusion policymakers can draw from these studies is that developmental education programs should be put in place to help skill-deficient students succeed. In her review of developmental education research, Bers concludes, "Clearly, remedial education is critical if colleges expect to raise academic standards without sacrificing access to higher education" (1987, p. 2).

Once the decision to implement a developmental education program has been made, the policies governing the program must then be designed to ensure that the program is appropriate for the students and the college environment. Although many studies exist on the effectiveness of developmental education, there has been little research on policies and procedures. Descriptions of policies for developmental education programs exist, but there are few evaluations on the effectiveness of the policies. For example, a 1993 publication by J. E. Roueche and S. D. Roueche reported the results of a survey of developmental education programs that the authors termed as "successful" at 12 community colleges. Two recommendations concerning policy issues emerged from the survey: "Basic skills assessment and placement in appropriate courses should be mandatory" (Roueche & Roueche, 1993, p. 251) and "Eliminate dual/simultaneous enrollment in skill and regular academic courses" (Roueche & Roueche, 1993, p. 252). However, it was not reported if research on these policies was conducted to discover if they made a difference in student persistence and performance.

Similarly, a survey of colleges and universities by the National Center for Education Statistics (1991) requested information on policies governing developmental education programs. The authors reported the following.

> At least 50 percent of institutions offering remedial courses in fall 1989 most frequently required students needing remediation to take remedial courses.

> Such courses were voluntary at only 2 to 3 percent of institutions. At the remainder of institutions, remedial courses were recommended but not required (p. 8).
>
> About two-thirds of institutions in fall 1989 allowed students to take some regular academic courses while taking remedial courses.... Almost no institutions (1 to 2 percent) entirely prohibited students who were enrolled in remedial courses from taking regular academic courses. The remaining one-third of institutions let students take any regular academic course while taking remedial courses (pp. 8, 10).

Again, no findings were reported on the effectiveness of these policies.

At the 1992 First National Conference of Research in Developmental Education, participants representing faculty, administrators, and counselors in developmental education programs at two-year and four-year colleges across the United States defined a research agenda for the field of developmental education (Boylan, Saxon, Bonham, & Parks, 1993). Participants believed further research was needed on the following policy issues (Boylan, Saxon, Bonham, & Parks, 1993).

> Does either mandatory or voluntary placement in developmental courses have an impact on student success?
>
> Do developmental students perform better when they are "mainstreamed" or "separated" as a result of assessment?
>
> What are the effects of taking regular college courses concurrently with developmental courses?

Scant research exists on these issues and on the best ways to structure and implement developmental education programs for maximum effectiveness.

In 1985, the College of Lake County, a comprehensive community college located in the far northern suburbs of Chicago with a student headcount of approximately 15,000, implemented a new admissions policy and began a new developmental education program to provide comprehensive academic support to skill-deficient students. There are four components to the

college's Skills Enhancement Program: assessment, advising, coursework, and academic support services. All students who plan to take college-level courses must provide proof of competency in reading, writing, and mathematics. Scores on the Computerized Placement Tests (CPT) and ACT are most commonly used as such proof. Students with test scores below specified levels must meet with an advisor who assists them with course selection and registration. Specific courses in reading, writing, and basic mathematics are provided for students needing remediation. In addition, counseling, tutoring, and support services are available to these students. By successfully completing the appropriate classes, skill-deficient students may remediate in one semester.

The college catalogue states the policies regarding the Skills Enhancement Program (College of Lake County, 1994, p. 11).

> The college is committed to the development of the reading, writing, and mathematical skills that are necessary for success in college-level courses and programs. Because of this commitment, the college requires that all new students who plan to take more than two college-level courses must meet the basic skills requirements specified for each of those courses. Students who lack the prerequisite skills will be required to enroll in one or more of the courses in the Skills Enhancement Program.

These policies have been controversial since their implementation. Although the college catalogue states the policies governing enrollment in developmental education and college-level courses, exceptions to these policies frequently occur. In certain cases, advisors and counselors permit students to register in more than two college-level courses without their having provided proof of competency in basic skills. In addition, some do not require skill-deficient students to enroll in courses in the Skills Enhancement Program. Others argue that the policies are vague and difficult to enforce.

Findings from a recent survey of College of Lake County faculty conducted during a review of the Skills Enhancement Program indicated that the vast majority of respondents believed

that students should not be allowed to enroll in any college-level classes until they have demonstrated competency in basic skills. They believed that the adoption and enforcement of such a policy would result in greater student success. However, a small group of faculty disagreed. Some qualified their responses stating that students should be allowed to enroll in college-level courses only under certain conditions. A few indicated that students should be permitted to take whatever courses they want because they have the right to fail: the "sink or swim" philosophy. The current policies reflect the college's dual commitment to quality education and access.

The purpose of this research study was to assess the effectiveness of the policies governing the College of Lake County's developmental education program. The following policy questions were addressed.

- Should skill-deficient students be required to remediate?
- Should skill-deficient students be required to begin their program of remediation upon initial enrollment?
- Should skill-deficient students be allowed to take college-level courses before completing their program of remediation?
- Should the policies regarding the enrollment in developmental education and college-level courses be the same regardless of the extent of deficiency?

Research Design

A recently implemented student tracking system was used to conduct this comprehensive and in-depth analysis of the policies governing the developmental education program. One of the primary reasons for the establishment of the student tracking system was to provide data to determine overall patterns of student progress in and the effectiveness of the developmental education program. The student tracking system establishes a longitudinal student database based on cohort files. Student are assigned to a cohort upon their first term of enrollment at the College of Lake County.

For this study, students in the fall 1992 cohort without previous higher education degrees were included. In addition, the students indicated on entrance that they intended to complete the

requirements for a community college degree or certificate and/or they intended to transfer to a four-year college. The study excluded students who enrolled in adult basic education classes their first semester (for example, English as a Second Language or GED classes). The study tracked the cohort through the end of fall semester, 1994.

In fall 1992, there were 1,644 students who fit the criteria for this study. Of these, 1,226 provided proof of competency in basic skills and were determined to be college-level. The remaining 418 students were classified as skill-deficient. Over half of these students, 239, had remediated by the end of fall semester, 1994. The remaining 179 skill-deficient students had not remediated.

College-level students were compared to skill-deficient students who remediated and skill-deficient students who did not. Those who were skill-deficient were further compared on various factors such as the extent of deficiency (reading, writing, and/or math) and the students' patterns of enrollment in developmental education and college-level courses. Student persistence and performance measures were used to address the research questions. Persistence was defined as the percent of the cohort who enrolled each semester. Performance measures included the average number of credits attempted, the average number of credits earned, the ratio of credits attempted and earned, and cumulative GPA from fall semester, 1992, through fall semester, 1994. Both developmental education courses and college-level courses were calculated in the average number of credits attempted and earned and the attempted/earned ratio. However, GPA included only grades received in college-level courses. Tests of significance were conducted on the performance measures. An alpha level of .05 was used for statistical tests.

Results

College-Level and Skill-Deficient Students

The first part of this analysis compares the academic performance and persistence of college-level students to those of skill-deficient students who remediated and skill-deficient students who did not remediate. As shown in Table 1, the performance of skill-deficient students who remediated resembled that of college-level students. No significant differences were found in

the average credits attempted, the average credits earned, and the average attempted/earned ratio of college-level students and students who remediated. There was a significant difference between the average GPA of college-level students and students who remediated. The GPA of skill-deficient students who remediated was not as high as that of college-level students. It is notable that the average GPA of the students who remediated, 2.17, is closer to that of college-level students, 2.44, than that of students who did not remediate, 1.52. Furthermore, since GPA is calculated only on college-level courses, the analysis reveals that students who remediated performed at an above C average in their college-level classes.

The academic performance of students who did not remediate was significantly different from both college-level students and skill-deficient students who remediated. Students who did not remediate attempted and earned fewer credits and had a lower attempted/earned ratio. Their average GPA, 1.52, reveals that they earned a lower than C average in their college-level classes.

Table 1

College-level, Remediated and Not Remediated Students by Performance Measures

		Performance Measures, Fall 1992 - Fall 1994			
		Averages			
Student Level	Number	Credits Attempted	Credits Earned	Attempted/ Earned Ratio	Cumulative GPA
College-level	1226	37	27	.68	2.44
Remediated	239	35	25	.70	2.17
Not Remediated	179	15	5	.32	1.52

Figure 1 presents the persistence rates from fall 1992 through fall 1994 of college-level students, skill-deficient students who remediated, and those who did not remediate. The figure shows the percent of students within each group who were still enrolled during these terms. Continuous enrollment was not a criterion for inclusion in this analysis.

Of the three groups, students who remediated had the highest level of persistence over the measured time period: 84% continued from fall 1992 to spring 1993, and 45% were still enrolled in fall semester, 1994. College-level students had a similar enrollment pattern although their level of persistence was slightly lower. Seventy-eight percent of the college-level students continued in spring 1993, and 33% were still enrolled in fall 1994. Skill-deficient students who did not remediate had the lowest rate of persistence of the three groups. In spring 1993, 37% were enrolled, and only 7% were enrolled fall 1994.

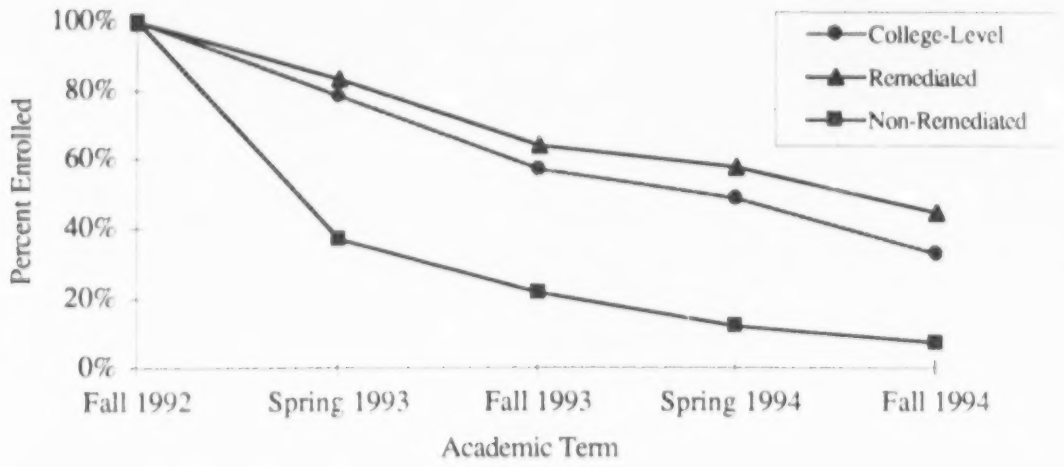

Figure 1. Persistence by student type.

Table 2 presents the academic performance of skill-deficient students by the term in which the students remediated. Students who remediated within their first academic year earned significantly more credits than those who remediated after their second term. Although the results are not statistically significant, students remediating within the first two academic terms of enrollment had a higher attempted/earned ratio and GPA than those who remediated in later terms.

Table 2

Term Remediated by Performance Measures

		Performance Measures, Fall 1992 - Fall 1994			
		Averages			
Term Remediated	Number	Credits Attempted	Credits Earned	Attempted/ Earned Ratio	Cumulative GPA
1st Term	157	35	25	.71	2.21
2nd Term	47	38	28	.73	2.29
After 2nd Term	35	32	19	.63	1.88

When persistence was examined by the term in which skill-deficient students remediated, no clear patterns were observed. Initially, students who remediated during the first or second term of enrollment persisted at higher rates than students who remediated after the first year. In the spring semester, 1993, 85% of students who remediated first term and 100% of the students who remediated second term were enrolled, but only 57% of those who remediated after second term were enrolled. In the following fall semester, 57% of the students who remediated first term, 81% of students who remediated second term, and 77% of the students who remediated after the second term were enrolled. Clearly, these percentages confirm community college students' tendency to stop out and return. In addition, some of the students who did not persist had reached their goals of graduation and/or transfer.

Course-Taking Behavior

This section examines the course-taking behavior of skill-deficient students in the first term of enrollment and prior to remediation and its relationship to academic achievement. Three patterns of course-taking behaviors were defined for this analysis: (a) students who focused exclusively on their remediation by enrolling in developmental education courses only, (b) students who took college-level courses concurrently with their remedial courses, and (c) students who enrolled

exclusively in college-level courses. Fourteen students did not take either developmental education or college-level courses their first term. They were not included in this part of the analysis.

The type of coursework taken in the first term of enrollment by skill-deficient students was significantly related to the rate of remediation. As can be seen in Figure 2, skill-deficient students who took both college-level and developmental education courses their first term remediated at a higher rate than other skill-deficient students. Slightly over half of the students who enrolled exclusively in developmental education classes in the first term remediated. Skill-deficient students who did not take any developmental education courses their first term remediated at the lowest rate.

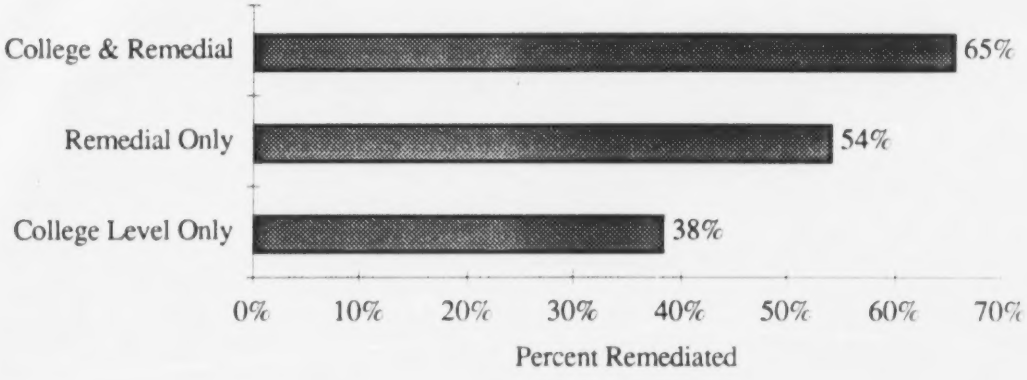

Figure 2. Remediation by course-taking behavior first term of enrollment.

Table 3 presents the type of courses skill-deficient students took their first term by performance measures. Generally, the students who took only developmental education classes their first term did somewhat better academically than those who did not concentrate exclusively on their remediation. Nevertheless, this is not the common enrollment behavior of skill-deficient students at the College of Lake County. The majority of skill-deficient students, 80%, took at least one college-level class their first term.

Significant differences existed in all four outcomes selected for this analysis. Students who took both college-level and developmental education courses their first term attempted and earned a higher average number of courses than students who took only remedial or only college-level

courses. Nevertheless, the students taking developmental education and college-level classes concurrently had a lower attempted/earned ratio and GPA than the other two groups. Students who focused exclusively on their remediation first term had the highest attempted/earned ratio and GPA of the remedial students. For the most part, the skill-deficient students who did not take any remedial courses their first term did not perform as well as the other skill-deficient students.

Table 3

Courses First Term by Performance Measures

		Performance Measures, Fall 1992 - Fall 1994			
		Averages			
Courses First Term	Number	Credits Attempted	Credits Earned	Attempted/ Earned Ratio	Cumulative GPA
Remedial Only	85	18	12	.59	2.26
College-Level Only	76	18	11	.55	1.99
College & Remedial	243	33	19	.51	1.85

Students who took only remedial and both remedial and college-level courses their first term of enrollment persisted at higher rates than students who took only college-level courses their first term. Sixty-two percent of students who took only remedial courses their first term and 71% of students who took both types of courses continued from fall semester, 1992 to spring semester, 1993 while only 46% of the students enrolling in college-level courses only their first term returned the following spring term.

The impact of course-taking behavior prior to remediation was more difficult to measure due to the small number of skill-deficient students who did not take at least one college-level course prior to remediation. As Table 4 presents, there were significant differences in the number of credits attempted, the number of credits earned, and the attempted/earned ratio of students who took different types of courses prior to remediation. Skill-deficient students who took both college-level and developmental education courses prior to remediation attempted and earned more

credits than students who took only college-level or only developmental education courses. However, the students who took college-level courses concurrently with their remedial courses had a significantly lower attempted/earned ratio than the other skill-deficient students. There was no significant difference found among the GPAs of these three groups. It should be noted that Table 4 includes 12 students who did not take any developmental education courses before remediating. In addition to passing remedial courses, students can demonstrate proof of competency in other ways such as by completing successfully certain college-level courses or by retaking the CPT and achieving scores above the cut-off scores for remediation.

Table 4

Courses Up to Remediation by Performance Measures

		Performance Measures, Fall 1992 - Fall 1994			
		Averages			
Courses Up to Remediation	Number	Credits Attempted	Credits Earned	Attempted/ Earned Ratio	Cumulative GPA
Remedial Only	42	24	20	.82	2.46
College-Level Only	12	28	20	.72	2.21
College & Remedial	182	38	26	.68	2.11

Comparing the persistence of students who took only remedial courses and students who took both college-level and remedial courses up to remediation revealed that students who took both types of courses persisted at a slightly higher rate than students who took only remedial classes. Eighty-nine percent of students who took both types of classes continued from fall 1992 to spring 1993 while 76% of students who took remedial classes did so.

Deficiency Level

Four deficiency levels were defined for this analysis: (a) math only; (b) language only, which included students who were reading and/or writing deficient only; (c) double deficient,

which included students who were reading or writing deficient and math deficient; and (d) triple deficient, students who were deficient in reading, writing and math.

There was a significant relationship between the level of student deficiency and the rate of remediation. As seen in Figure 3, students deficient only in math had the highest rate of remediation: 69% had remediated by the end of fall semester, 1994. Students who were language deficient remediated at the rate of 66%, followed by double deficient students who remediated at the rate of 53%. Only 33% of triple deficient students had remediated by the end of fall semester, 1994.

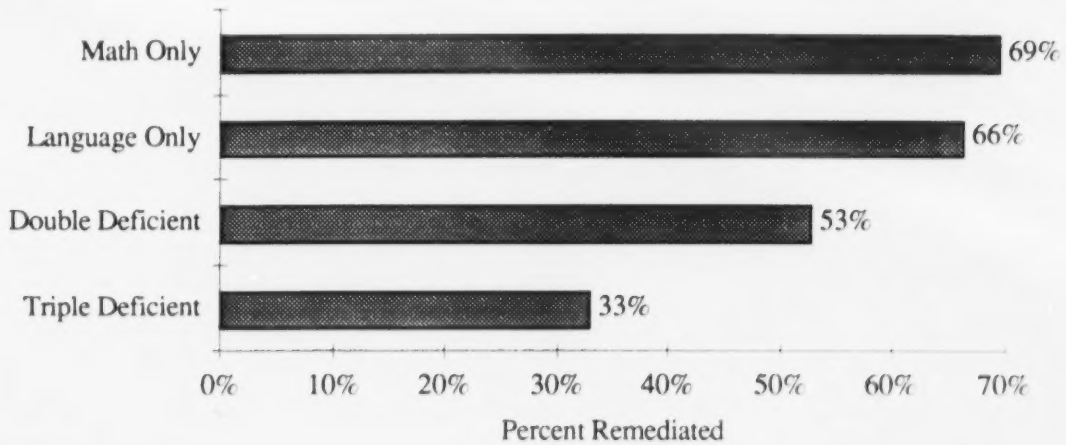

Figure 3. Remediation by deficiency.

The findings of the analysis of student deficiency and performance measures are presented in Table 5. In general, students who were math deficient only or double deficient had greater academic success than students who were language deficient only or triple deficient. There was a significant difference in the number of credits attempted by students who were triple deficient and those who were language deficient only. Students who were triple deficient attempted fewer credits, an average of 21 credits from fall 1992 to fall 1994, than those students that were language deficient, who attempted an average of 30 credits during the same time period. Students who were double deficient and students deficient only in math also attempted more credits than those students

who were triple deficient. Furthermore, the analysis revealed that triple deficient students earned fewer credits and had a lower attempted/earned ratio than students with fewer deficiencies.

The level of deficiency was significantly related to GPA in college-level courses. Students with a deficiency in math only had a significantly higher GPA, 2.20, than students with a language deficiency or multiple deficiencies. Students with a language deficiency only had the lowest GPA, 1.63, of the four groups.

Table 5

Deficiency by Performance Measures

		Performance Measures, Fall 1992 - Fall 1994			
		Averages			
Deficiency	Number	Credits Attempted	Credits Earned	Attempted/ Earned Ratio	Cumulative GPA
Math Only	124	26	17	.60	2.20
Language Only	112	30	17	.50	1.63
Double Deficient	97	27	16	.54	2.08
Triple Deficient	85	21	12	.50	1.88

The patterns of persistence were similar for students who were single or double deficient. Approximately two-thirds of the single and double deficient students continued at the college in spring 1993, and about one-half enrolled the following fall. Students who were triple deficient had a slightly lower persistence rate than the other skill-deficient students. Fifty-four percent enrolled spring semester, 1993, and only 34% were enrolled fall 1993.

Discussion and Conclusions

The results of this study point to guidelines for designing or revising policies governing developmental education programs. This section examines each of the policy questions and makes recommendations regarding the placement and enrollment of skill-deficient students.

The first research question was: Should skill-deficient students be required to remediate? This study revealed that skill-deficient students who remediated were far more successful and persisted longer than skill-deficient students who did not remediate. The academic performance and persistence rates of remediated students compared very favorably to college-level students. Based on the findings of this study, skill-deficient students should be required to remediate.

There were also clear findings to address the second policy question: Should skill-deficient students be required to begin their program of remediation upon initial enrollment? Students who remediated during their first academic year of enrollment earned significantly more credits than students who delayed their remediation. Students who took developmental education courses their first term of enrollment remediated at a much higher rate than students who took only college-level courses their first semester. Skill-deficient students who focused exclusively on developmental education courses their first term had the highest average attempted/earned ratio and GPA of the remedial students. Therefore, the results support the recommendation that students should be required to begin their programs of remediation upon initial enrollment.

The findings regarding enrollment in college-level courses by skill-deficient students are not as clear. Students who enrolled in college-level courses and developmental education courses their first term remediated at a slightly higher rate than students who took only remedial courses. However, their average GPA was lower than that of students who took only remedial courses. They attempted and earned a much larger number of credits than students who took only developmental education courses; however, their average attempted/earned ratio was lower than that for students who took only remedial courses.

When students who took both college-level and developmental education courses their first semester are compared to students who took only college-level courses their first term, the findings are more clear. Students who took both types of courses remediated at higher rate and attempted and earned more credits. Perhaps the recommendation regarding the taking of college-level courses by skill-deficient students should be as follows. Skill-deficient students should be allowed to take college-level courses before completing their programs of remediation as long as they are

simultaneously working on remediating. Skill-deficient students should not be allowed to take college-level courses before beginning their programs of remediation.

The final research question addressed the possibility of differing policies for skill-deficient students depending on the extent of deficiency. The findings of the study indicated that students who were deficient in math only remediated at a higher rate and were more successful academically than the other skill-deficient students. However, they did not perform as well as college-level students. Language-deficient students did not do as well as students who were math deficient only. Students who were triple deficient remediated at the lowest rate and had the lowest rate of persistence. From the findings, there is not a strong case for modifying the policies according to the extent of deficiency. However, the results suggest a recommendation that language deficient and triple deficient students should be strongly encouraged to focus on their programs of remediation before beginning college-level courses.

In sum, the results of this research study support the following recommendations.

- Skill-deficient students should be required to remediate.
- Skill-deficient students should be required to begin their programs of remediation upon initial enrollment.
- Skill-deficient students should be allowed to take college-level courses before completing their programs of remediation as long as they are simultaneously working on remediating.
- Language deficient and triple deficient students should be strongly encouraged to focus on their programs of remediation before beginning college-level courses.

In conclusion, the purpose of this research study was to investigate the policies governing a developmental education program at a comprehensive community college. Although the results reflect only one college, the methodology can be used as a model for other colleges faced with these same questions. Further evidence from other studies and from additional studies at the College of Lake County on other cohorts will provide better indications of the most appropriate policies governing developmental education programs to achieve maximum effectiveness, enhance student success, and balance access and quality.

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